

WATER USE EFFICIENCY PROGRAM

INTRODUCTION

The City of Kent (City) recognizes that water is a valuable and essential natural resource that needs to be used wisely. This Water Use Efficiency (WUE) Program provides an approach to increase water use efficiency within the City's water service area.

BACKGROUND

THE WATER USE EFFICIENCY RULE

The Washington State Department of Health (DOH) implemented the WUE Rule, effective on January 22, 2007, as required by the Municipal Water Supply – Efficiency Requirements Act, also known as the Municipal Water Law (MWL), passed by the Washington State Legislature in September 2003. The MWL requires the state to implement the WUE Rule. The intent of the rule is to help reduce the demand that growing communities, agriculture, and industry have placed on the state's water resources, and to better manage these resources for fish and other wildlife. Municipal water suppliers are obligated under the WUE Rule to enhance the efficient use of water by the system and/or its consumers. The requirements of the WUE Rule are set forth in Chapter 246-290, Part 8, Washington Administrative Code (WAC).

WATER USE EFFICIENCY REQUIREMENTS

DOH has provided guidance for municipal water suppliers on how to prepare and implement a WUE program that complies with the WUE Rule. The *Water Use Efficiency Guidebook*, published by DOH, was most recently revised and updated in 2017. The guidebook identifies the water use reporting, forecasting, and efficiency program requirements for public water systems. A WUE program meeting these requirements is a necessary element of a water system plan as required by the DOH and is necessary to obtain water right permits from the Washington State Department of Ecology (Ecology). The *Water Use Efficiency Guidebook* defines the necessary components of a WUE program as four fundamental elements.

1. Planning requirements, which include collecting data, forecasting demand, evaluating WUE measures, calculating distribution system leakage, and implementing a WUE program to meet goals.
2. A distribution system leakage (DSL) standard of 10 percent or less based on a 3-year rolling average.
3. Goal setting to provide a benchmark for achievement and to help define the success of the WUE program.
4. Annual performance reporting on progress towards meeting WUE goals.

WATER USE EFFICIENCY PROGRAM

The City's current WUE Program elements are summarized in this section.

PLANNING REQUIREMENTS AND WUE PROGRAM ACTIVITIES

The City's water use data, demand forecasts, supply characteristics, and other planning requirements are contained throughout this Water System Plan (WSP). The City is committed to continue collecting water use data beyond that presented in **Chapter 4** for evaluation of its WUE Program and water use patterns, and for forecasting demands for future facilities. Consistent with WAC 246-290-810, the WUE program effectiveness will continue to be evaluated within each WSP update.

Recent WUE program activities are presented in the **Selected Measures** section.

WATER USE EFFICIENCY GOALS AND THE PUBLIC PROCESS

Per WAC 246-290-830, WUE goals must be set through a public process and shall be evaluated and reestablished as part of a WSP update. The City formally adopted water use efficiency goals in 2007 via its City Council Public Works Committee and last updated its WUE Program as part of its 2011 WSP. The goals and objectives of the City's previous WUE Program, which extends to the approval of this WSP, are as follows.

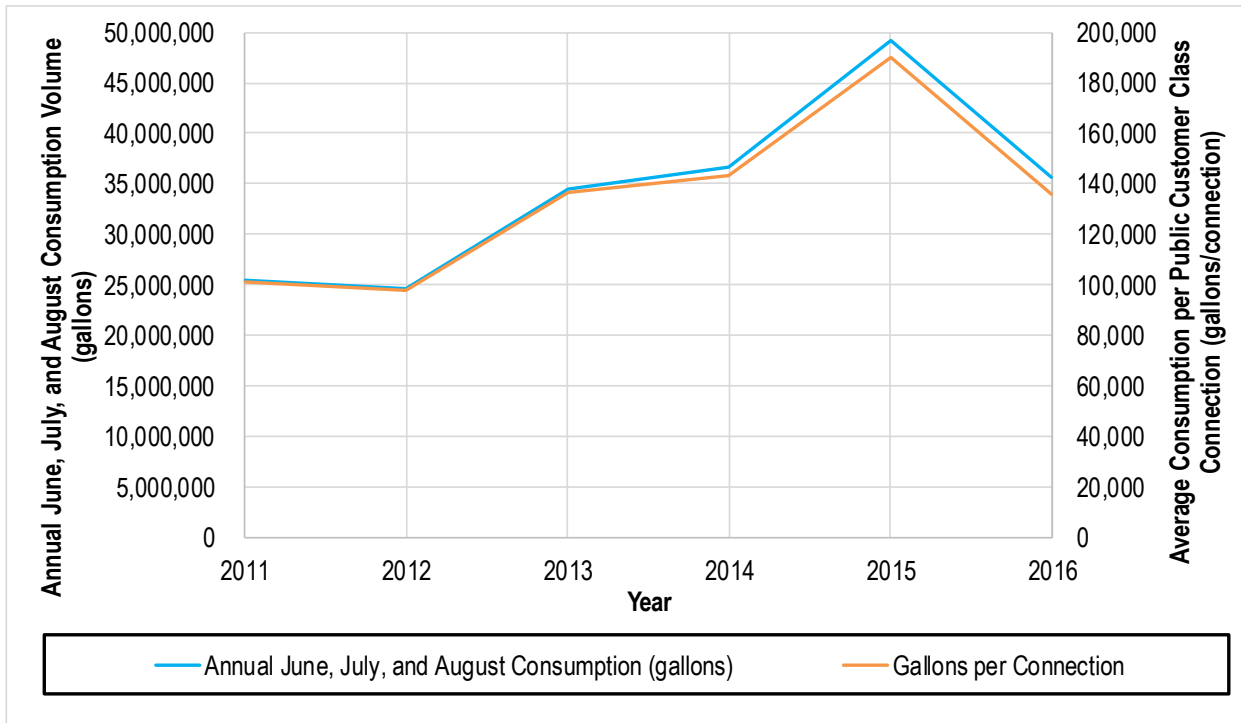
- Reduce water use by public agencies during the months of June, July, and August by 0.5 percent per year.
- Maintain system-wide DSL at less than 6 percent per year.

Results of the existing WUE program indicate that public consumption in June, July, and August (including the City, school, and government entities) decreased in 2012 and 2016, but increased in 2013, 2014, and 2015 as shown in **Table 1**. The average change over the last 6 years is an approximate 10 percent increase in public customer class consumption in June, July, and August. However, with consideration for additional public water service connections added each year, the average consumption per public customer class connection has increased 9 percent over the last 6 years. **Chart 1** shows the combined June, July, and August consumption totals for 2011 through 2016, and the average consumption per public customer class connection for the same period.

Table 1
Public Customer Class Historical June, July, and August Consumption

Period	Gallons	% Change from Year Prior
June 2011	4,848,536	--
July 2011	11,202,048	--
August 2011	9,421,808	--
Total 2011	25,472,392	--
June 2012	5,971,284	--
July 2012	8,613,968	--
August 2012	10,076,308	--
Total 2012	24,661,560	-3.2%
June 2013	6,966,124	--
July 2013	16,337,816	--
August 2013	11,232,716	--
Total 2013	34,536,656	40.0%
June 2014	6,250,288	--
July 2014	16,117,156	--
August 2014	14,242,668	--
Total 2014	36,610,112	6.0%
June 2015	11,339,680	--
July 2015	20,098,012	--
August 2015	17,753,032	--
Total 2015	49,190,724	34.4%
June 2016	8,928,876	--
July 2016	15,113,340	--
August 2016	11,636,636	--
Total 2016	35,678,852	-27.5%

Chart 1
Public Customer Class Historical June, July, and August Consumption Volume



System-wide DSL is discussed in **Chapter 4** and has been less than 6.0 percent each year since 2011, and the City’s 3-year rolling average between 2014 and 2016 is 5.0 percent. Based on the relative success the City has had in achieving its WUE goals and objectives, an additional goal has been established that includes the City’s multi-family residential customer class. The proposed WUE goals for the 2018 to 2028 water system planning cycle are as follows.

- Reduce water use by public agencies during the months of June, July, and August by 0.5 percent per year.
- Reduce multi-family residential water consumption by 1.0 percent per year.
- Maintain system-wide DSL at less than 6.0 percent per year and based on a 3-year rolling average.

In compliance with the WUE Rule, a public hearing will be held at a City Council meeting to present and discuss the new goals. The City Council will affirm the new goals at the meeting.

WATER USE EFFICIENCY PROGRAM EVALUATION AND PERFORMANCE REPORTING

The City will continue to evaluate overall demand, per capita water use, and the amount of DSL on an annual basis (coinciding with the production of the Consumer Confidence Report (CCR)). The City will also evaluate the performance of its WUE Program and implemented measures at this time by analyzing demand data and determining the long-term trend towards reducing water usage and meeting WUE goals. If the WUE Program monitoring shows that progress towards meeting the WUE goals is not being accomplished, more rigorous WUE Program

implementation or additional WUE Program items will be considered, along with a cost-effective evaluation of measures.

The City will continue to provide annual WUE performance reports to its consumers in the CCR and detail the results of water use monitoring and progress towards achieving the system's WUE goals. The City will comply with DOH Annual WUE Performance report requirements, due to DOH by July 1st of each year.

EVALUATION AND SELECTION OF WATER USE EFFICIENCY MEASURES

The City's evaluation of WUE measures and selected levels of implementation are presented within this section. The measures fall within three categories of implementation: 1) mandatory measures that must be implemented; 2) measures that must be evaluated; and 3) measures selected by the City that either must be evaluated or implemented.

The City served 14,907 water service connections in 2016, which is the base year of the City's WSP. Based on the number of connections, at least nine WUE measures must be evaluated or implemented. Measures that are mandatory cannot be credited towards the system's WUE measures. Since the City implements or plans on implementing all the evaluated measures presented here, a cost-effective evaluation is not required.

Mandatory Measures

Source Meters

The volume of water produced by the system's sources must be measured using a source meter or other meter installed upstream of the distribution system. Source meters currently are installed and operating at each of the City's sources. If any new sources are installed in the future, they will be equipped with a source meter. Meter testing and repairs are ongoing as-needed as part of the City's preventive maintenance program.

Service Meters

All public water systems that supply water for municipal purposes must install individual service meters for all water users. Service meters currently are installed and operating at all connections throughout the distribution system. All future connections that are installed or activated will be equipped with a service meter.

Meter Calibration

The City must calibrate and maintain meters based on generally accepted industry standards and manufacturer information. Compliance will be maintained by the City by performing maintenance on the source and service meters every 5 to 10 years at a minimum. Meter calibration verification testing is performed on an as-needed basis, typically annually.

Water Loss Control Action Plan

To control leakage, systems that do not meet the DSL standard must implement a Water Loss Control Action Plan (WLCAP). The City's rolling 3-year average DSL is below 10.0 percent based on the information presented in **Chapter 4** of the WSP. Therefore, a WLCAP is not required to be implemented.

Customer Education

Annual customer education regarding the importance of using water efficiently is a required element of all WUE programs. Customer education is provided in the City's annual CCR to customers and includes information on the system's DSL, progress towards meeting WUE goals, and tips for customers on using water more efficiently. Additional customer education and outreach measures are identified in the **Selected Measures** section.

Measures That Must Be Evaluated

Rate Structure

Evaluation of rate structures to increase water demand efficiency is required (WAC 246-290-100(4)(j)(iv)), and actual implementation of a conservation rate structure counts as a WUE measure (WAC 246-290-810(4)(d)). The City implements an inclining block rate structure, which is a conservation rate structure. The City charges a flat monthly meter access fee (based on meter size) and a water usage fee (increasing with the amount of water consumed) in each billing period. The City previously implemented seasonal water rates every May through September to discourage excess water use during peak months, but eliminated that practice to stabilize revenue throughout the year and provide more certainty on rates to customers. The 2018 residential rate structure is shown in **Table 2**, and the 2018 rate structure for non-single-family residential customers is shown in **Table 3**.

Table 2
2018 Single-family Residential Rate Structure

Monthly Meter Access Fees	
Meter Size	Base Rate
3/4" or less	\$23.71
1"	\$37.12
Monthly Dedicated Fire Line Fees	
Size	Rate
3/4" or less	\$2.82
1"	\$3.29
Water Usage Fee per 100 Cubic Feet	
Consumption	Rate
0 to 800 cubic feet	\$2.46 per 100 cubic feet
800+ cubic feet	\$4.84 per 100 cubic feet

Table 3
2018 Non Single-family Residential Rate Structure

Monthly Meter Access Fees	
Meter Size	Base Rate
3/4" or less	\$29.80
1"	\$43.21
1.25"	\$43.21
1.5"	\$76.75
2"	\$116.99
3"	\$184.06
4"	\$277.96
6"	\$412.11
8"	\$546.25
10"	\$680.40

Monthly Dedicated Fire Line Fees	
Size	Rate
3/4" or less	\$2.82
1"	\$3.29
1.25"	\$4.93
1.5"	\$6.57
2"	\$10.52
3"	\$26.29
4"	\$52.56
6"	\$105.13
8"	\$177.41
10"	\$262.83

Water Usage Fee per 100 Cubic Feet	
Consumption	Rate
0 to 800 cubic feet	\$2.46 per 100 cubic feet
800+ cubic feet	\$4.84 per 100 cubic feet

Reclamation Opportunities

Reclaimed water is treated effluent from a wastewater treatment system that is suitable for a direct beneficial use or a controlled use that would not otherwise occur. The use of reclaimed water is regulated under Chapter 90.46 of the Revised Code of Washington (RCW). Water systems with 1,000 or more connections must evaluate reclamation opportunities (WAC 246-290-100(4)(f)(vii)), but only actual use of reclaimed water counts as a WUE measure (WAC 246-290-810(4)(d)) or multiple WUE measures if the reclaimed water is used for multiple purposes.

The City's wastewater is conveyed to King County's South Treatment Plant in Renton for treatment and disposal. King County operates a reclaimed water program at the South Treatment Plant that provides some reclaimed water for irrigating athletic fields and nurseries, and street sweeping. No reclaimed water is currently provided to the City, but that opportunity may exist in the future.

The City investigated other opportunities for reclaimed water use in 2007 and determined that there were no economically feasible options at that time.

The City will continue to evaluate the feasibility of using reclaimed water in the future as conditions change.

Selected Measures

The City has chosen to implement 11 different WUE measures in addition to those that are mandatory or required to be evaluated. Because several of these WUE measures affect multiple customer classes, the City's WUE program counts as 46 WUE measures (**Table 4**), which is greater than the requirement of 9 WUE measures based on the number of service connections.

Water Bill Showing Consumption History

The City has presented consumption history charts and information on water bills for all customer classes since 1998 and plans to continue to do so in the future.

Washing Machine/Toilet/Sprinkler Rebates

The City offers a \$75 mail-in rebate for customers to replace old washing machines with more energy efficient horizontal axis washing machines. As of 2018, eligibility was limited to applicants who purchased a qualifying Energy Star washing machine and installed it in a residence in the City's water service area.

The City also offers a toilet rebate up to \$50 per toilet to incentivize customers to purchase U.S. Environmental Protection Agency (EPA) certified WaterSense toilets. As of 2018, eligibility was limited to customers who purchased a WaterSense toilet and used it to replace an existing 5 gallon-per-flush toilet installed prior to 1993 in the City's water service area.

In one instance, the City observed a 10- to 15-percent reduction in water consumption by replacing 247 toilets in a single apartment complex. The City has prepared a list of over 75 additional multi-family complexes constructed prior to 1993 that will be eligible for this rebate. This rebate is expected to be a key component of achieving the City's multi-family residential WUE goal of reducing multi-family residential water consumption by 1.0 percent per year.

The City also offers rebates for public customers to install high-efficiency sprinkler system products.

School Outreach

Since 2000, the City has co-sponsored the annual H₂O Festival, which presents WUE information to approximately 1,500 elementary school children from the City and adjacent communities every year. The program educates children about the importance of WUE and empowers youth to participate in water conservation.

Speakers Bureau

The City staff gives periodic presentations about water conservation practices to local groups and organizations on an as-requested basis. The City has prepared a variety of outreach materials for this purpose, and employs a full-time conservation specialist that is available for this purpose.

Advertising

The City distributes WUE information through its regular billing system and advertises its fixture rebate programs and education programs on its website. The City also advertises King County's Natural Yard Care program on its website, which is a program that strives to reduce water consumption for irrigation.

Displays at Fairs or Events

The City makes staff available to present water conservation materials and displays at local fairs and events, and even distributes brochures and water conservation kits.

Customer Leak Detection Education

The City's utility workers regularly inspect meters for abnormal usage and recheck meters when excessive consumption is evident. Staff are encouraged to contact homeowners who have potential leaks and distribute informational pamphlets on how to check for leaks and read their own meters. The City also provides the same information to customers who contact the City with questions.

Water Use Audits for Large Users

The City provides water conservation audits for large users and maintains a variety of financial incentives for commercial or industrial users to implement conservation measures.

Rain Sensors

Section 15.07.040(C) of the City Code requires irrigation systems constructed as parts of new developments to include rain sensors to promote water conservation.

Landscape Ordinances

Section 15.04.180(20) of the City Code prohibits activities that violate water conservation management practices in the development of agricultural and residential lands.

**Table 4
Selected WUE Measures**

Mandatory WUE Measures	
Measure	Implementation Status
Source Meters Installed	✓
Service Meters Installed	✓
Meter Calibration Compliance	✓
Water Loss Control Action Plan	Not Applicable
Customer Education	✓

WUE Measures that Must Be Evaluated	
Measure	Evaluation Status
Rate Structure	✓
Reclamation Opportunities	✓

Selected WUE Measures					
Measure	Implementation Status				
	Single-family Residential	Multi-family Residential	Commercial	Industrial	Public
Rate Structure	✓	✓	✓	✓	✓
Water Bill Showing Consumption History	✓	✓	✓	✓	✓
Washing Machine/Toilet/Sprinkler Rebates	✓	✓			✓
School Outreach	✓	✓			
Speakers Bureau	✓	✓	✓	✓	✓
Advertising	✓	✓	✓	✓	✓
Displays at Fairs or Events	✓	✓	✓	✓	✓
Customer Leak Detection Education	✓	✓	✓	✓	✓
Water Use Audits for Large Users			✓	✓	✓
Rain Sensors	✓	✓	✓	✓	✓
Landscape Ordinances	✓	✓			✓

WATER USE EFFICIENCY PROGRAM SCHEDULE AND BUDGET

The WUE measures described above and selected for implementation by the City are summarized in **Table 5** with their corresponding schedule and budget. The successful implementation of this program is expected to:

- Reduce water use by public agencies during the months of June, July, and August by 0.5 percent per year;
- Reduce multi-family residential water consumption by 1.0 percent per year; and
- Maintain system-wide DSL at less than 6 percent per year.

Accomplishing these goals is expected to reduce the system-wide average daily demand by approximately 3.8 percent by 2028, with the annual savings from each goal shown in **Chart 2**.

**Table 5
WUE Schedule and Budget**

Mandatory WUE Measures		
Measure	Schedule	Budget
Source Meters Installed	Ongoing	O&M Funded
Service Meters Installed	Ongoing	O&M Funded
Meter Calibration Compliance	Ongoing	O&M Funded
Water Loss Control Action Plan	Not Applicable	Not Applicable
Customer Education	Ongoing	O&M Funded
WUE Measures That Must Be Evaluated		
Measure	Schedule	Budget
Rate Structure	Ongoing	Not Applicable
Reclamation Opportunities	Ongoing	Not Applicable
Selected WUE Measures		
Measure	Schedule	Budget
Rate Structure	Ongoing	Not Applicable
Water Bill Showing Consumption History	Ongoing	Not Applicable
Washing Machine/Toilet/Sprinkler Rebates	Ongoing	\$100,000 per Year
School Outreach	Ongoing	\$35,000 per Year
Speakers Bureau	Ongoing	\$5,000 per Year
Advertising	Ongoing	\$35,000 per Year
Displays at Fairs or Events	Ongoing	\$5,000 per Year
Customer Leak Detection Education	Ongoing	O&M Funded
Water Use Audits for Large Users	Ongoing	\$35,000 per Year
Rain Sensors	Ongoing	Not Applicable
Landscape Ordinances	Ongoing	Not Applicable

O&M = Operations and Maintenance

Chart 2
WUE Program Projected Water Savings

